

Work Order ID 84184

\*84184\*

May-07-12 11:04:40 AM

Page 1

Item ID: D206-667-201

Accept

\*N9000040100\*

Setup Start

\*NS1\*

Revision ID:

Stop

\*NS2\*

Item Name: Crosstube Aft

Start Date: 07/05/2012 Start Qty: 1.00

\*1\*

Cust Item ID:

Required Date: 31/05/2012 Req'd Qty: 1.00

\*1\*

Customer:

Reference:

Approvals: Process Plan: MLJ

Date: 12/05/07 Tooling:

Date:

Run Start

\*NR1\*

QC:

Date:

SPC (Y/N):

Date:

Stop

\*NR2\*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr

Revision Nbr

D206-667-241

Rev C (DEO)

DSI 9471

Rev A

100

0.00

\*100\*

DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy bluefile and create labels as per PPP D206-667-201 CHG004

110

0.00

\*110\*

Packaging

Packaging

Memo

0.00

Packaging

MLJ 12-7-16

MO 12-6-15

W/O: 84184

## WORK ORDER CHANGES

DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D206-667-201 PAR #: \_\_\_\_\_ Fault Category: y-tube NCR: Yes No DQA: JA Date: 12/07/19  
 Resolution: \_\_\_\_\_ Disposition: Use as is QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR: 12-1594

## WORK ORDER NON-CONFORMANCE (NCR)

DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
12/6/18	120	# of bonding passes is below dwg.	GP 12/6/18	Acceptable. No history of fatigue issues with tube.	N/A	12/6/18	GP 12/6/18	12/6/18

NOTE: Date & initial all entries

# Work Order ID 84184

**\*84184\***

Page 2

May-07-12 11:04:40 AM

Item ID: D206-667-201

Accept

**\*N900040100\***

Setup Start **\*NS1\***

Revision ID:

Item Name: Crosstube Aft

Stop **\*NS2\***

Start Date: 07/05/2012 Start Qty: 1.00 **\*1\***

Cust Item ID:

Required Date: 31/05/2012 Req'd Qty: 1.00 **\*1\***

Customer:

Reference:

Approvals: Process Plan: Date:

Tooling: Date:

Run Start **\*NR1\***

QC: Date:

SPC (Y/N): Date:

Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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120

0.00

**\*120\***

BENDING MACHINE - CROSSTUBES

CNC Bend 2

Memo

0.00

CNC Alpha 160 Bender

Bend tube as per Dwg D206-667-241 using CNC bender program 206B-AF and Folio FT

*mo/len* 12-6-18

130

QC15- Crosstube Dimensional Check

0.00

**\*130\***

QC

Memo

0.00

Quality Control

*8/12/06/15*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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NOTE: Date & initial all entries

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Page 3

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Setup Start **\*NS1\***

Revision ID:

Stop **\*NS2\***

Item Name: Crosstube Aft

Start Date: 07/05/2012 Start Qty: 1.00

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Cust Item ID:

Required Date: 31/05/2012 Req'd Qty: 1.00

**\*1\***

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start **\*NR1\***

QC:

Date:

SPC (Y/N):

Date:

Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
140	Crosstubes	0.00							
<b>*140*</b>									
Crosstubes									
Crosstubes									
	<b>Memo</b>	0.00							
	1-Drill pilot holes (3/16") as per Dwg D206-667-241 using drill Jig DT8575 & DT8576								
	2-Drill & ream holes as per Dwg D206-667-241 using drill Jig DT8575 & DT8576. (DRILL 3 HOLES ON BOTH SIDES)								
	3-Flip tube and switch drilling Jigs from right to left, left to right. Locate tube using "T" pins off holes drilled in previous step.								
	4-Drill pilot holes (3/16") as per Dwg D206-667-241 using drill Jig DT8575 & DT8576								
	5-Drill & ream holes as per Dwg D206-667-241 using drill Jig DT8575 & DT8576. Check dimensions between holes on all four sides to ensure proper alignment. Use DT8583 & 8584 SUPPORT Jigs. (DRILL 3 HOLES ON BOTH SIDES)								
	6-Drill rivet holes as per Dwg D206-667-241 using drill Jig DT8788								
	7-C'sink holes as per Dwg D206-667-241.								
	8-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D206-667-241								
	9-Scribe part # and batch # using vibrating stylus as per Dwg D206-667-241 Inside of Cuff (Donot engrave on outside of tube)								

*RM*  
*MO*

*12-6-19*

*RM*

*12-6-20*

*RM*

*12-6-19*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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Work Order ID 84184

\*84184\*

Page 4

May-07-12 11:04:40 AM

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\*N900040100\*

Setup Start \*NS1\*

Revision ID:

Stop \*NS2\*

Item Name: Crosstube Aft

Start Date: 07/05/2012 Start Qty: 1.00

\*1\*

Cust Item ID:

Required Date: 31/05/2012 Req'd Qty: 1.00

\*1\*

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_

Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start \*NR1\*

QC: \_\_\_\_\_ Date: \_\_\_\_\_

SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop \*NR2\*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
150	Crosstubes Chemical Conversion	0.00							
<b>*150*</b>									
HandFXtube	Memo	0.00							
Hand Finishing Crosstubes									
160	QC3- Inspect Part Finish	0.00							
<b>*160*</b>									
QC	Memo	0.00							
Quality Control									
170	QC5- Inspect part completeness to step on W/O	0.00							
<b>*170*</b>									
QC	Memo	0.00							
Quality Control									

Pb →

8/7/09/0

W/O: 84/84 Rem. Iron

## WORK ORDER CHANGES

DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
12/17/17	# 150/160	move steps # 150 + 160 to after step # 200	EE	12.07.17			S. 12/17/17

Part No: D206-667-201 PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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\*84184\*

Page 5

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\*N9000040100\*

Setup Start \*NS1\*

Revision ID:

Stop \*NS2\*

Item Name: Crosstube Aft

Start Date: 07/05/2012 Start Qty: 1.00 \*1\*

Cust Item ID:

Required Date: 31/05/2012 Req'd Qty: 1.00 \*1\*

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start \*NR1\*

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop \*NR2\*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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180 Outsource process - NDT per QSI038 4.1 0.00

\*180\*

Outsource2

Memo

0.00

Outsource process - NDT

CROSSTUBES

P/O: 17282

CL 12/06/22 (1)

190 Packaging 0.00

\*190\*

Packaging

Memo

0.00

Packaging

Ensure copy of NDT results attached to work order.

*[Signature]*

200 QC6- Inspect dimensions to drawing 0.00

\*200\*

QC

Memo

0.00

Quality Control

Inspect for damage & ensure results are as per Dwg D206-667-201

5/12/07/05

\* chemical coat as per Dwg 12/06/27  
06/2008

\* act inspect chemical coat → 5/12/07/05

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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May-07-12 11:04:40 AM

**\*84184\***

Page 6

Item ID: D206-667-201

Accept

**\*N900040100\***

Setup Start **\*NS1\***

Revision ID:

Stop **\*NS2\***

Item Name: Crosstube Aft

Start Date: 07/05/2012 Start Qty: 1.00 **\*1\***

Cust Item ID:

Required Date: 31/05/2012 Req'd Qty: 1.00 **\*1\***

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start **\*NR1\***

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

210

0.00

**\*210\***

SprayPaint

SprayPaint

Memo

0.00

Spray Painting

1-Mask Threaded holes

2-Prime inside and outside crosstube as per QSI 005 4.2

3-Paint outside crosstube with White Imron as per QSI 005 4.2

PRIME: 121746

Start Time: 7:45

Finish Time: 8:15

PAINT: 120985

Start Time: 1:45

Finish Time: 2:15

12-7-5

220

QC14- Inspect Spray Paint

0.00

**\*220\***

QC

Memo

0.00

Quality Control

Wrap in plastic bag to protect from scratches

576710p

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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Page 7

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**\*N900040100\***

Setup Start **\*NS1\***

Revision ID:

Stop **\*NS2\***

Item Name: Crosstube Aft

Start Date: 07/05/2012 Start Qty: 1.00 **\*1\***

Cust Item ID:

Required Date: 31/05/2012 Req'd Qty: 1.00 **\*1\***

Customer:

Reference:

Approvals: Process Plan: Date: Tooling: Date: Run Start **\*NR1\***  
QC: Date: SPC (Y/N): Date: Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

230

0.00

**\*230\***

Crosstubes

Crosstubes

Memo

0.00

Crosstubes

1-Abrade mating surfaces of support and crosstube with 400 grit sandpaper, clean the area with 4105S wash 'n' wipe

2-Install supports with Proseal 890 per DSI9565 and QSI 015

A/R Proseal 890 Batch: 121287

3- Torque bolts as per dwg

12/07/09

240

QC5- Inspect part completeness to step on W/O

0.00

**\*240\***

QC

Memo

0.00

Quality Control

DAS 16 12/09/16

250

Pick Kit

0.00

**\*250\***

Packaging

Memo

0.00

Packaging

12/2/16

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Work Order ID 84184

\*84184\*

Page 8

May-07-12 11:04:40 AM

Item ID: D206-667-201

Accept

\*N900040100\*

Setup Start \*NS1\*

Revision ID:

Stop \*NS2\*

Item Name: Crosstube Aft

Start Date: 07/05/2012 Start Qty: 1.00 \*1\*

Cust Item ID:

Required Date: 31/05/2012 Req'd Qty: 1.00 \*1\*

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start \*NR1\*

QC:

Date:

SPC (Y/N):

Date:

Stop \*NR2\*

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Tool ID

Tool #

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

260

QC4- 100% Inspect kits for completeness

0.00

\*260\*

QC

Memo

0.00

Quality Control

270

Packaging

0.00

\*270\*

Packaging

Memo

0.00

Packaging

Identify and pack for shipping as per PPPD206-667-201

Location: 63

PPP Rev: D

280

QC21- Final Inspection - Work Order Release

0.00

\*280\*

QC

Memo

0.00

Quality Control

DAS 16 2-8 2/25/12

12/17/12

12/17/12

12-07-16

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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**NOTE:** Date & initial all entries



# Picklist Print

May-07-12 11:04:45 AM

Page 1

Work Order ID: 84184

**\*84184\***

Parent Item: D206-667-201

**\*D206-667-201\***

Parent Item Name: Crosstube Aft

Start Date: 07/05/2012

Required Date: 31/05/2012

Start Qty: 1.00

Required Qty: 1.00

Comments:

IPP RevA: New issue DD verified by:EC  
11.08.08 PER ECN 11-615 DD VERF:EC

IPP REV:B

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D206-667-201TRN		Manufactured	No			110	Each	0.0000	1	1			
<b>*D206-667-201TRN*</b>					82792				**			Mo 12-6-15	
Crosstube Turning Detail													
D2891-1		Manufactured	No			230	Each	24.0000	2	2			
<b>*D2891-1*</b>									**			12 07 09	
2.25 Support													

Location	Loc Qty	Loc Code
LG052	24	
72822	1	
75176	1	
80160	3	
82277	19	

D3595-063-395		Manufactured	No			230	Each	62.0000	4	4			
<b>*D3595-063-395*</b>									**			12 07 09	
RUBBER CUSHION													

Location	Loc Qty	Loc Code
LG051	62	
82223	62	

MS21920-20		Purchased	No			230	Each	120.0000	4	4			
<b>*MS21920-20*</b>									**			12 07 09	
Clamp (per MIL-DTL-8783C)													

Location	Loc Qty	Loc Code
LG050	120	
116799	8	
120676	16	
121067	46	
121274	50	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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May-07-12 11:04:45 AM

Page 2

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Parent Item Name: Crosstube Aft

Start Date: 07/05/2012

Required Date: 31/05/2012

Start Qty: 1.00

Required Qty: 1.00

AN5-10A

Purchased

No

250

Each

296.0000

10

10

**\*AN5-10A\***

Bolt

\*\*

11/22/15

Location

Loc Qty

Loc Code

ST337

296

118191

80

120630

14

120717

50

120770

2

121181

50

121243

100

AN5-30A

Purchased

No

250

Each

81.0000

10

10

**\*AN5-30A\***

BOLT

\*\*

Location

Loc Qty

Loc Code

ST339

81

117514

7

120423

19

120910

25

121259

30

AN5-32A

Purchased

No

250

Each

292.0000

4

4

**\*AN5-32A\***

Bolt

\*\*

Location

Loc Qty

Loc Code

ST339

192

119328

27

119862

50

120423

75

120910

30

121415

10

ST340

100

121541

100

May-07-12 11:04:46 AM

Shop Packet Print

Page 2

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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May-07-12 11:04:46 AM

Page 3

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Parent Item Name: Crosstube Aft

Start Date: 07/05/2012

Required Date: 31/05/2012

Start Qty: 1.00

Required Qty: 1.00

AN960JD516

NAS1149D0563J

Purchased

No

250

Each

0.0000

20

20

**\*AN960JD516\***

Washer

D2872-043

Manufactured

No

250

Each

7.0000

2

2

**\*D2872-043\***

Nut Plate Assembly

\*\*

\*\*

Location

Loc Qty

Loc Code

ST025

7

82601

7

Manufactured

No

250

Each

7.0000

2

2

D2872-045

**\*D2872-045\***

Nut Plate Assembly

\*\*

Location

Loc Qty

Loc Code

ST019

7

82602

7

Manufactured

No

250

Each

4.0000

1

1

D3039-3

**\*D3039-3\***

Centre Drill

\*\*

Location

Loc Qty

Loc Code

ST024

4

14761

4

May-07-12 11:04:46 AM

Shop Packet Print

Page 3

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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May-07-12 11:04:46 AM

Page 4

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\*84184\*

\*D206-667-201\*

Start Date: 07/05/2012

Required Date: 31/05/2012

Start Qty: 1.00

Required Qty: 1.00

MS21042L5

Purchased

No

250

Each

1,463.000

10

10

\*MS21042I 5\*

Nut

\*\*

12/7/16 JP

Location

Loc Qty

Loc Code

300

300

121652

300

ST300

1163

116105

5

116548

43

117611

30

119109

1085

10

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

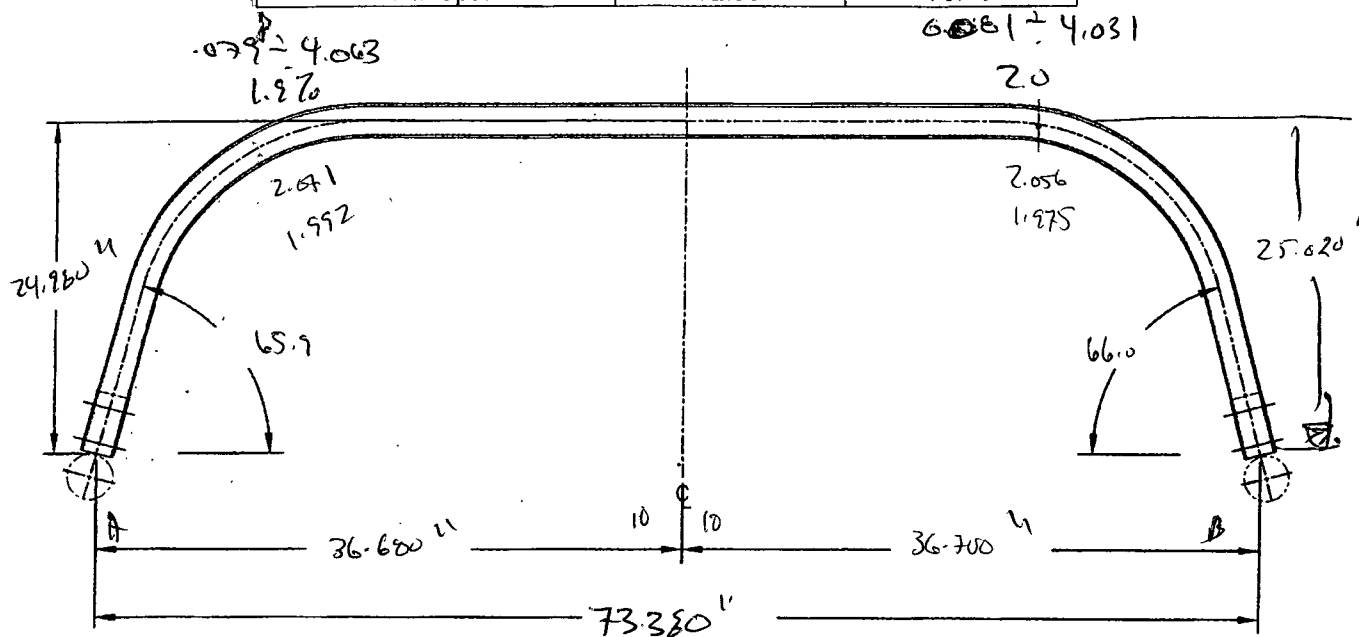
NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



<b>DART AEROSPACE LTD</b>		<b>Work Order:</b>	84184
<b>Description:</b> Crosstube High Aft (206B)		<b>Part Number:</b>	D206-667-201
<b>Inspection Dwg:</b> D206-667-241 <b>Rev:</b> C		<b>Page 1 of 1</b>	

Required Dimension	Min	Max
Height	24.91	25.17
1/2 Span	36.47	36.73
Angle	65	67
Total Span	72.95	73.45



Comments
SIDE A = 1.970 crank @ 10 Passes
SIDE B = 2.056 crank @ 10 Passes
Acceptable 12/6/18

QC15 Inspection	
Date	12/06/18

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	07.12.04	24-98 was 24.48	KJ/JM	
C	11.10.12	Dimensions updated per Dwg Rev C	KJ	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# DART SERVICE INSTRUCTION

TO AMEND INSTALLATION INSTRUCTIONS IIN-D206-667 REV. C OR EARLIER REVISION  
AND INSTRUCTIONS FOR CONTINUED AIRWORTHINESS ICA-D206-667 REV. 2 OR EARLIER REVISION  
REF TCCA STC: SH01-5  
REF FAA STC: SR01304NY  
REF EASA STC EASA.IM.R.S.01179

## PURPOSE:

For the D206-667-201 Crosstube Installation, the parts list was missing the required drill bit specified in Figure 5 of IIN-D206-667 and Figure 32-5 of ICA-D206-667.

## CHANGE:

For the D206-667-201 Crosstube Installation, the included D3039-3 Center Drill is used to open the specified holes to Ø0.313". The hole must then be opened to Ø0.323"+0.005/-0.000. The parts list of IIN-D206-667 and ICA-D206-667 is amended as follows:

5.0 PARTS LIST (IIN-D206-667 REV. C OR EARLIER REVISION)  
32.8 PARTS LIST (ICA-D206-667 REV. 2 OR EARLIER REVISION)

QTY	PART NUMBER	DESCRIPTION
-201		
X	D206-667-201	CROSSTUBE INSTALLATION, 206A/B HIGH AFT
1	D3039-3	CENTER DRILL (ADD)

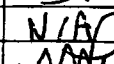
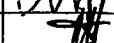
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RETURN TO  
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WITHOUT NOTICE  
WORK ORDER  
NO. 84184 MCT  
12/05/07

CANADA  
DEPARTMENT OF TRANSPORT  
AIRCRAFT CERTIFICATION  
BRANCH  
DAO # 01-O-01

APPROVED

BY:   
D. SHEPHERD (DE # 02)

DATE: 09.07.06  
CERT. NO.: SH01-5  
ISSUE NO.: 3

A	NEW ISSUE, NCR 09-005	CP	09.07.06
REV.	DESCRIPTION	BY	DATE
DESIGN	99	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
DRAWN	99		
CHECKED	3	DRAWING NO.	REV. A
MFG. APPR.	N/A	DSI 9471	SHEET 1 OF 1
APPROVED		TITLE	SCALE
DE APPR.		CENTER DRILL ADDITION	NTS
DATE	09.07.06	COPYRIGHT © 2009 BY DART AEROSPACE LTD <small>THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD</small>	

**Dart Aerospace Ltd**

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

Item	Qty -241	Part Number	Description
1	X	D206-667-241	CROSSTUBE ASSEMBLY (206B HIGH AFT)
2	1	D6003-102	CROSSTUBE
3	2	D2891-1	SUPPORT
4	4	D3595-063-395	RUBBER CUSHION
5	4	MS21920-20	CLAMP (OR MS21920-21)
6	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

**GENERAL NOTES:**

- 1) MATERIAL: MANUFACTURED FROM D6003-102  
FINISHED LENGTH = 100.60±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D206-667-241" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- 7) WEIGHT: 22.5 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT EDGE LONGITUDINALLY. TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 12 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-20 CLAMPS (OR -21) WITH D3595-063-395 RUBBER CUSHIONS TO SECURE THE D2891-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS MECHANISMS ARE LOCATED ON CROSSTUBE CLAMPS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOP COPY  
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SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER

NO. 84184 MLJ  
12/05/07

UNDER REVIEW

RELEASED  
08/11/12

DEO ATTACHED

C	REFORMAT/REVISE GENERAL NOTES/PART LIST (ZN D7-1); REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS. D3595-063-395 WAS D2855-400-694 (ZN D8-2 & A5-2); REMOVED REF. & ADD TOLERANCES (ZN C5-3, C4-3, D3-3); RELOCATED FLAG #6 (ZN A7-3) PER NCR 210; MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4.	RF	08.11.06
B	ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	PH	05.02.04
A	NEW ISSUE	CP	00.11.17
REV.	DESCRIPTION	BY	DATE
DESIGN	<u>RF</u>	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
DRAWN	<u>RF</u>	DRAWING NO.	REV. C
CHECKED	<u>RF</u>	D206-667-241	SHEET 1 OF 4
MFG. APPR.	<u>RF</u>	TITLE	SCALE
APPROVED	<u>RF</u>	CROSSTUBE ASS'Y (206B HIGH AFT)	NTS
DE APPR.	<u>RF</u>	COPYRIGHT © 2000 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE, OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD	
DATE	08.11.06		

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

8

7

6

5

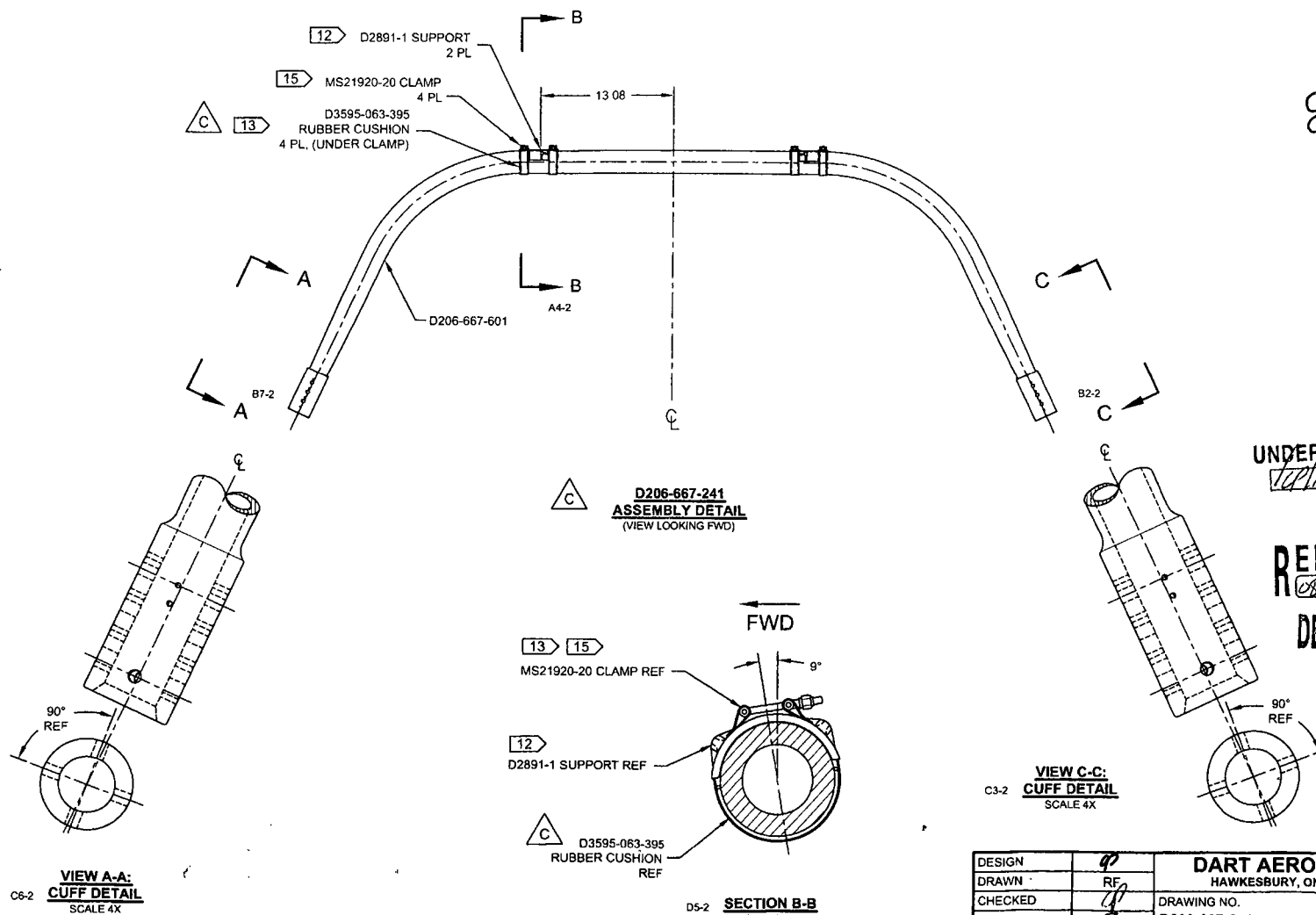
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3

2

1

84184



UNDER REVIEW

08/11/06 OK 08/11/06

RELEASED  
08/11/06  
DEO ATTACHEDVIEW C-C:  
CUFF DETAIL  
SCALE 4X

DESIGN	9	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	RF	DRAWING NO.	REV. C
MFG. APPR.	RF	D206-667-241	SHEET 2 OF 4
APPROVED	RF	TITLE	SCALE
DE APPR.	RF	CROSSTUBE ASS'Y (206B HIGH AFT)	NTS
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

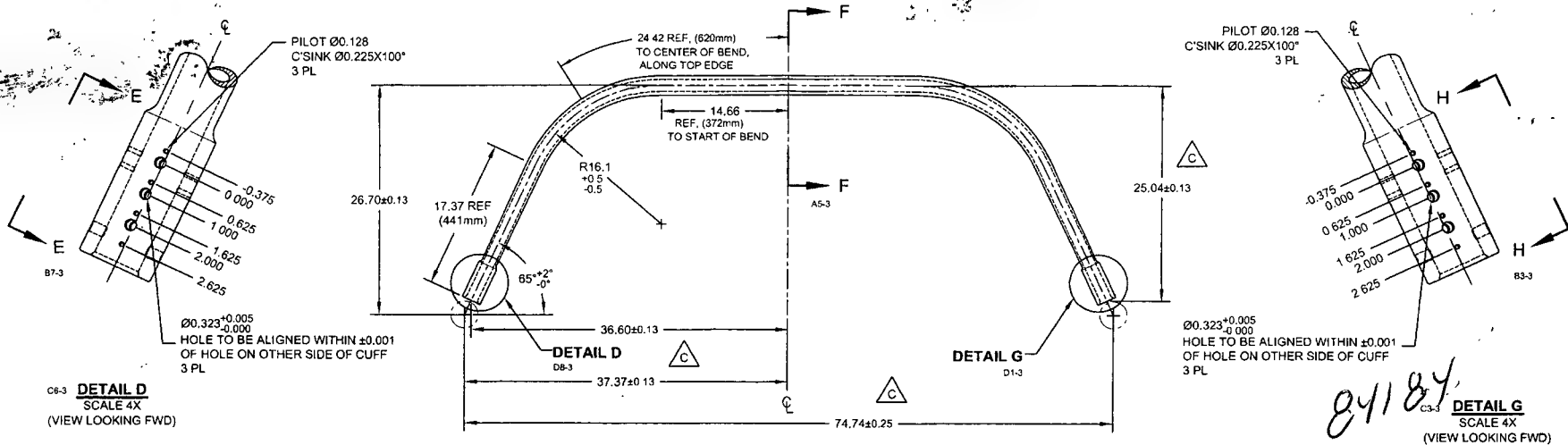
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NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

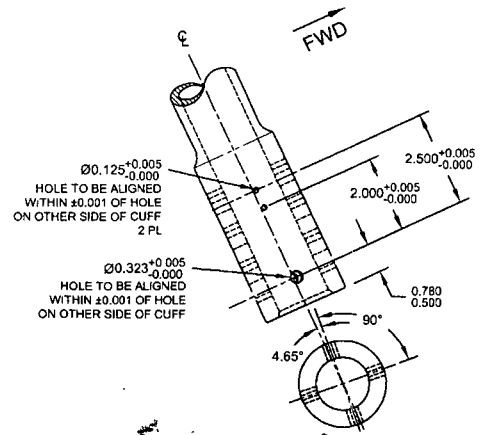
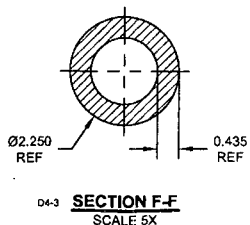
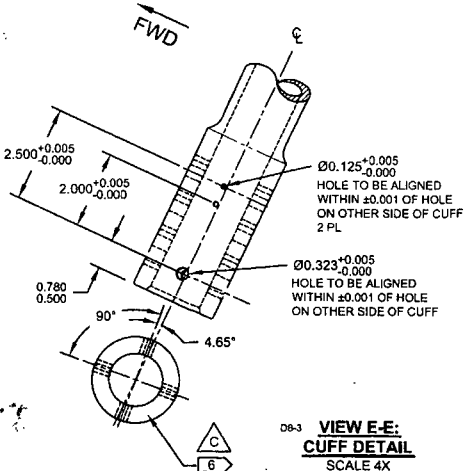
NOTE: Date & initial all entries



8 7 6 5 4 3 2 1



**D206-667-601**  
**BENDING AND DRILLING DETAIL**  
(VIEW LOOKING FWD)



UNDER REVIEW  
10/10/06  
OK 11/08/06

**RELEASED**  
**DEO ATTACHED**

DESIGN	9	<b>DART AEROSPACE LTD</b>	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	10	DRAWING NO.	REV. C
MFG. APPR.	10	D206-667-241	SHEET 3 OF 4
APPROVED	10	TITLE	SCALE
DE APPR.	10	CROSSTUBE ASS'Y (206B HIGH AFT)	NTS
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

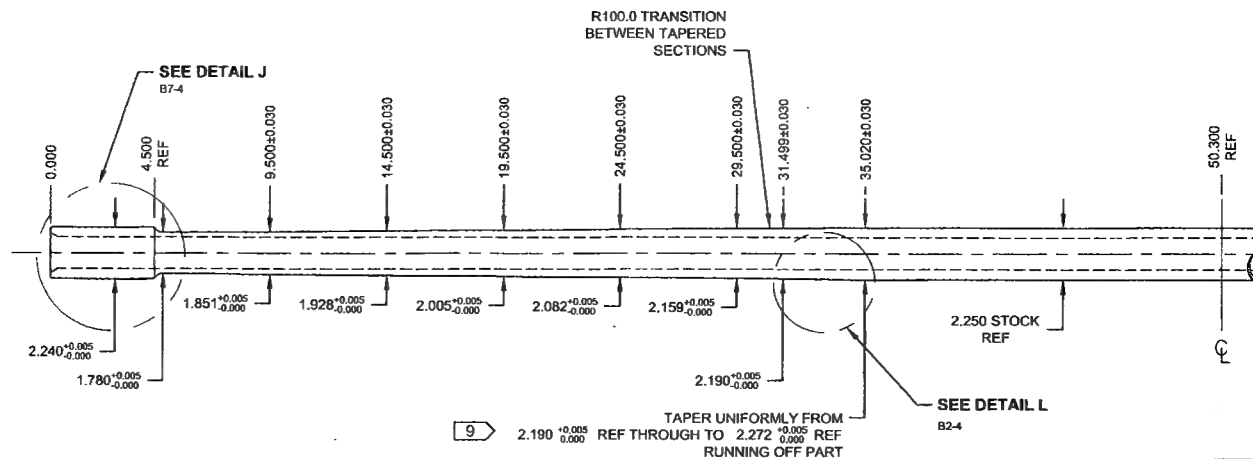
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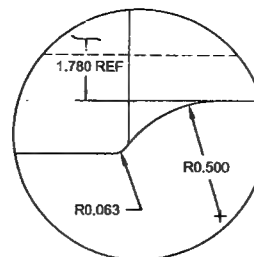
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84184

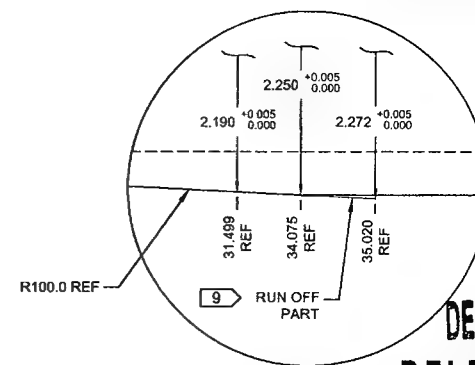


UNDER REVIEW  
11/06/17 OK 11.08.17

**TURNING DETAIL**

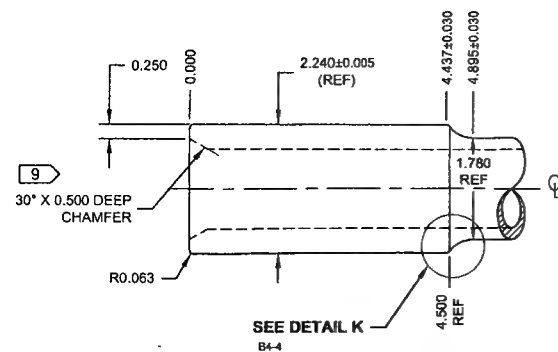


**DETAIL K: CUFF TRANSITION**  
NOT TO SCALE



**DETAIL L: TAPER RUN-OFF**  
NOT TO SCALE

DEO ATTACHED  
RELEASED  
06/11/17



**DETAIL J: CROSSTUBE CUFF**  
NOT TO SCALE

DESIGN	9	<b>DART AEROSPACE LTD</b>	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	UP	DRAWING NO.	REV. C
MFG. APPR.	GP	D206-687-241	SHEET 4 OF 4
APPROVED	11/06/17	TITLE	SCALE
DE APPR.		CROSSTUBE ASS'Y (206B HIGH AFT)	NTS
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8 7 6 5 4 3 2 1

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

DRAWING NO. D206-667-241	TITLE CROSSTUBE ASS'Y (206B HIGH AFT)	REV. C	<b>DART AEROSPACE LTD ENGINEERING ORDER</b>		D.E.O. NO. D206-667-241-C-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN 90	CHECKED AS	MFG. APPR. M	APPROVED MD		DE APPR. H		
DATE 11.07.15	DATE 11.08.22	DATE 11.08.22	DATE 11/08/22		DATE 11.08.22		

**PURPOSE:**

REPLACE MAGNOBOND WITH PROSEAL.

**CHANGE:**

**IS:**

Item	Qty -241	Part Number	Description
6	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

**WAS:**

6	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
---	-----	----------------	---

NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

**IS:**

- 12) TO INSTALL D2891-1 SUPPORT: ABRAD MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. **PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.**

**WAS:**

- 12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

**RELEASED**  
2011-08-23  
M

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



## LIQUID PENETRANT TEST REPORT

P- 12189

CLIENT DART AeroSpace DATE JUNE 27/2012 PAGE 1 OF 1  
ATTENTION LINDA / MATT ACUREN JOB NO. 188-12-CO 270 TIME AM ☒ PM ☐  
ADDRESS 1270 A BIRDEEN ST. POWO No. -  
HAWKESBURY, ON. WORK LOCATION SAME  
ACCEPTANCE STD. ASTM 1417/OSI-030 REV./DATE 2005  
PROJECT F.P.I. ON CROSS TUBES  
ITEM(S) EXAMINED 9 PCS

JOB DESCRIPTION PROCEDURE NO. LT 0002 REV./DATE 2008 TECHNIQUE NO. LT 1417 REV./DATE 2008  
PART NO. SEE RESULTS MATERIAL STEEL / ALUMINUM THICKNESS VARIOUS  
SCOPE A DYE FLOUORESCENT PENETRANT INSPECTION WAS CARRIED OUT ON THE EXTERNAL SURFACE 100%

## TEST DETAILS

METHOD ☒ FLUORESCENT ☐ VISIBLE ☒ WATER WASH ☐ SOLVENT REMOVABLE ☐ POST EMULSIFIED  
FAMILY BRAND MAGNA FLUX BLACK LIGHT S/N 1809 ☐ OUTPUT > 1000  $\mu$  W/cm<sup>2</sup> ☐ AMBIENT < 2 fc  
PENETRANT 2LG7 MINIMUM DWELL TIME 10 MIN. LIGHTING EQUIP. ☐ FLASHLIGHT ☐ TROUBLELIGHT ☐ OUTPUT > 100 fc @ SURFACE  
PENETRANT REMOVER H2O MINIMUM DRY TIME > 10 MIN. OTHER LABINO  
DEVELOPER SK052 MINIMUM DWELL TIME 10 MIN. LIGHT METER S/N 1098866 CAL DUE DATE JULY 28/2012  
DEVELOPER TYPE ☒ NON AQUEOUS ☐ AQUEOUS ☐ DRY

## TEST SURFACE

SURFACE CONDITION ☐ AS GROUND ☐ AS WELDED ☒ MACHINED ☐ SHOT BLASTED ☒ CLEAN BARE METAL  
SURFACE TEMPERATURE ☐ < - 4°C/ 20°F ☐ - 4°C/ 20°F TO 10°C/50°F ☒ 10°C/50°F TO 52°C/125°F ☐ > 52°C/125°F

RESULTS- ☒ METRIC ☐ IMPERIAL

QTY	W.O. #	COMMENTS	ACCEPT	REJECT
1	85335	CROSS TUBES	✓	
1	73809	" "	✓	
1	85402	" "	✓	
1	73808	" "	✓	
1	73806	" "	✓	
1	84184	" "	✓	
1	84185	" "	✓	
1	84527	" "	✓	
1	84526	" "	✓	

STEEL L TUBES

ALUMINUM TUBES

## Scope of Services

The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

## Standard of Care

In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

## SIGNATURES

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TECHNICIAN (SIGNATURE): Mike Harkin 1<sup>st</sup> TECHNICIAN 2<sup>nd</sup> TECHNICIAN  
NAME (PRINT): Mike Harkin CGSB LEVEL II SNT LEVEL 6606 CGSB REG. NO. 6606  
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